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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/088,911	06/12/2002	Kenneth Guild	604-630	2285

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EXAMINER	
CURS, NATHAN M	

ART UNIT	PAPER NUMBER
2613	

DATE MAILED: 11/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/088,911	GUILD ET AL.	
	Examiner	Art Unit	
	Nathan Curs	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 August 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,7,8,10-16,22 and 23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,7,8,10-16,22 and 23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 June 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: "Combined Amplitude and Non-Amplitude Optical Signal Modulation Apparatus and Method".

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 16 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 16 recites the limitation "the further control information". There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 3, 7, 10-14, 16, 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fee (US Patent No. 5956165) in view of Harley et al. ("Harley") (US Patent No. 6574016).

Regarding claims 1, Fee discloses a method of encoding control information on an optical data signal to be transmitted through an optical network, comprising operating an optical source to generate a substantially coherent continuous-wave light beam, amplitude-modulating the light beam with a data stream to produce an optical data signal, and also modulating the data signal with control information (col. 4, lines 24-52 and col. 7, line 51 to col. 8, line 21). Fee does not disclose modulating the data signal with the control information using a substantially constant amplitude modulation technique. Harley discloses an optical system where a low speed subcarrier control signal is used to modulate a high speed amplitude modulated optical data signal (col. 1, lines 35-56), where the subcarrier signal has substantially constant amplitude modulation (col. 5, lines 5-13). Harley also discloses minimizing undesirable effects that the subcarrier modulation imposes on the optical data signal (col. 5, lines 13-21). It would have been obvious to one of ordinary skill in the art at the time of the invention to change the subcarrier modulation technique of Fee such that the subcarrier signal is added to an optical data signal by optically modulating the optical data signal with a subcarrier signal having a substantially constant amplitude modulation, as taught by Harley, to provide the benefit of minimizing undesirable effects of the subcarrier modulation on the data signal modulation.

Regarding claim 3, the combination of Fee and Harley discloses a method as claimed in clam 1, wherein the control information is added to the optical data signal by means of a phase-shift-keying modulation technique (Harley: col. 5, lines 5-13, as applicable in the combination).

Regarding claim 7, the combination of Fee and Harley discloses a method as claimed in clam 1, wherein following the modulation of the light beam with the data stream, the optical data

signal is passed a constant amplitude modulator to which is supplied the control information to be applied to the optical data signal (Harley: fig. 2 in light of col. 5, lines 5-21, as applicable in the combination).

Regarding claim 10, Fee discloses an optical data signal transmitter adapted to encode control information on an optical data signal to be transmitted through an optical network, which transmitter comprises an optical source arranged to generate a substantially coherent continuous-wave light beam, an amplitude-modulator which modulates said light beam with a data stream and control information, to produce an optical data signal (col. 4, lines 24-52 and col. 7, line 51 to col. 8, line 21). Fee does not disclose a substantially constant amplitude modulator arranged to modulate the data signal with control information, using a non-amplitude modulation technique. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Harley with Fee, as described above for claim 1.

Regarding claim 11, the combination of Fee and Harley discloses an optical data signal transmitter as claimed in claim 10, wherein the optical source comprises a laser source (Fee: col. 7, line 51 to col. 8, line 4, as applicable in the combination).

Regarding claim 12, Fee discloses a method of modifying control information carried by an optical data signal transmitted through an optical network, comprising the steps of encoding the control information on the optical signal so as to be associated with a stream of data (col. 7, line 51 to col. 8, line 4), transmitting the optical signal to a traffic processor, reading and decoding the control information and then deciding upon the routing of the stream of data depending upon the decoded information, and passing the optical data signal through a wavelength converter based on semiconductor optical amplifier thereby simultaneously removing the control information (col. 7, lines 6-14 and col. 9, line 35 to col. 11, line 51). Fee does not disclose that the control information is encoded on the optical signal using a non-

amplitude varying format. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Harley with Fee as described above for claim 1.

Regarding claim 13, the combination of Fee and Harley discloses a method as claimed in claim 12, wherein further ("updated") control information is encoded on the optical signal following wavelength conversion thereof, so as to be associated with the wavelength-converted data signal (Fee: col. 9, line 35 to col. 11, line 51, as applicable in the combination).

Regarding claim 14, the combination of Fee and Harley discloses a method as claimed in claim 13. Fee does not disclose that the "updated" control information is encoded on the optical signal by a substantially constant amplitude modulation technique. However, related to the combination of Harley and Fee as described above for claim 1, it would have been obvious to one of ordinary skill in the art at the time of the invention to change the subcarrier modulation technique of Fee such that the high speed optical data signal is modulated with a substantially constant amplitude updated subcarrier signal, based on the modulation technique taught by Harley (col. 5, lines 5-21), to provide the benefit of minimizing undesirable effects of the subcarrier modulation on the data signal modulation.

Regarding claim 16, the combination of Fee and Harley discloses a method as claimed in claim 12, but does not disclose that further ("updated") control information is added to the optical data signal by means of a phase-shift-keying modulation technique. However, related to the combination of Harley and Fee as described above for claim 1, it would have been obvious to one of ordinary skill in the art at the time of the invention to change the subcarrier modulation technique of Fee such that the high speed optical data signal is modulated with a substantially constant amplitude updated subcarrier signal, including phase-shift-keying modulation, based on the modulation technique taught by Harley (col. 5, lines 5-21), to provide the benefit of minimizing undesirable effects of the subcarrier modulation on the data signal modulation.

Regarding claim 22, Fee discloses an optical data signal receiver for reading a light beam modulated with control information and modulated with data using an amplitude modulation technique, the receiver comprising a control information reader and a router for routing the modulated data stream in response to the control information (col. 7, lines 6-14 and col. 9, line 35 to col. 11, line 51). Fee does not disclose that the control information modulation is constant amplitude modulation. However, Harley discloses subcarrier detection using a coupler/tap and detector technique similar to fee (col. 5, lines 22-40) and discloses using a substantially constant amplitude modulation subcarrier control signal to modulate the optical data signal (col. 5, lines 5-13). Harley also discloses minimizing undesirable effects that the subcarrier modulation imposes on the optical data signal (col. 5, lines 13-21). It would have been obvious to one of ordinary skill in the art at the time of the invention to change the subcarrier modulation technique of Fee such that the optical data signal is modulated with a subcarrier signal having a substantially constant amplitude modulation, as taught by Harley, to provide the benefit of minimizing undesirable effects of the subcarrier modulation on the data signal modulation.

Regarding claim 23, the combination of Fee and Harley discloses an optical data signal receiver as claimed in claim 22, further comprising means for removing the control information from the modulated light beam (Fee: col. 9, line 35 to col. 11, line 51, as applicable in the combination).

6. Claims 2 and 15 rejected under 35 U.S.C. 103(a) as being unpatentable over Fee (US Patent No. 5956165) in view of Harley et al. ("Harley") (US Patent No. 6574016) as applied to claims 1, 3, 7, 10-14, 16, 22 and 23 above, and further in view of Benedetto et al. ("Benedetto")

(Benedetto et al.; *Theory of polarization shift keying modulation*; Communications, IEEE Transactions on; Volume 40, Issue 4, April 1992, pages: 708-721).

Regarding claim 2, the combination of Fee and Harley discloses a method as claimed in clam 1, where the control information is added to the optical data signal by a substantially constant amplitude modulation technique such as FSK or PSK (Harley: col. 5, lines 5-13 as applicable in the combination), but does not disclose that the control information is added to the optical data signal by means of a polarization modulation technique. Benedetto discloses POLSK as an alternative to FSK and PSK (page 708, section "I. Introduction"). It would have been obvious to one of ordinary skill in the art at the time of the invention to use POLSK as the control information modulation technique in the combination of Fee and Harley, since POLSK has the advantage of being highly insensitive to laser phase noise, as taught by Benedetto (page 717, section "V. System Considerations").

Regarding claim 15, the combination of Fee and Harley discloses a method as claimed in claim 14, where the updated control information is added to the optical data signal by a substantially constant amplitude modulation technique such as FSK or PSK (Harley: col. 5, lines 5-13 as applicable in the combination), but does not disclose that the updated control information is encoded on the optical signal by a polarization modulation technique. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to further combine Benedetto with the combination of Fee and Harley, as described above for claim 2.

7. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fee (US Patent No. 5956165) in view of Harley (US Patent No. 6574016), and further in view of Yonenaga et al. ("Yonenaga") (US Patent No. 5543952).

Regarding claim 8, the combination of Fee and Harley discloses a method as claimed in claim 1, where the high data rate amplitude modulated optical source is an "externally modulated laser" (Fee: col. 7, line 67 to col. 8, line 4) but does not explicitly disclose that the externally modulated laser is based on a Mach-Zehnder interferometer. Yonenaga discloses a Mach-Zehnder external modulator for high speed optical transmission (col. 1, lines 7-34). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a Mach-Zehnder external modulator for the external modulated laser of Fee, since Mach-Zehnder external modulators avoid chirping, as taught by Yonenaga.

Response to Arguments

8. Applicant's arguments filed 23 August 2006, with respect to the argument that in the Kazovsky reference the ASK modulated signal is the low data rate signal and the data modulated using modulation that does not rely upon transmission power variations is the high data rate signal, has been fully considered and is persuasive for arguing against the combination of Fee and Kazovsky reading on the corresponding claim limitation (where the claimed non-amplitude modulated subcarrier signal is the lower rate signal). Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Harley.

Conclusion

9. Any inquiry concerning this communication from the examiner should be directed to N. Curs whose telephone number is (571) 272-3028. The examiner can normally be reached on M-F (from 9 AM to 5 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached at (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (800) 786-9199.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pairdirect.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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